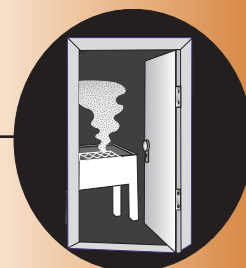
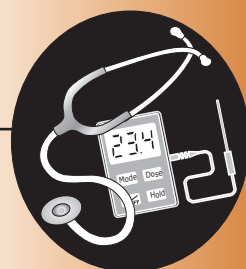




**Division of Occupational  
Safety and Health**

# Formaldehyde



## Chapter 296-856 WAC

**September 2006 Edition**



# **Standards Update to Chapter 296-856 WAC, Formaldehyde**

Issue Date 9/2006  
Effective Date 9/1/2006

The Department of Labor and Industries has rewritten and reorganized for clarity and ease of use the safety standards for Formaldehyde. The Department has amended Chapter 296-62-07540 to apply only to Agriculture. The general industry requirements relating to Formaldehyde have been moved into and adopted as Chapter 296-856 WAC, Formaldehyde.

To receive future updates of this standard and all other Department of Labor and Industries safety and health standards electronically, please sign up on the WISHA Listserv (<http://www.lni.wa.gov/Safety/Rules/default.htm>). By subscribing to the Listserv, you will also receive rule updates, hearing notices, and informational packets for all safety and health rules.

Also available on the WISHA web site:

- WISHA Core Rules
- Other General WISHA Rules
- Industry and Task-specific Rules
- Proposed rules and hearings
- Newly adopted rules and new rule information
- WISHA Regional Directives (WRDs)
- WISHA Interim Operations and Interpretive Memoranda (WIIM)
- Memoranda of Understanding (MOU)

To receive hardcopy updates of this rule, please return the card located at the back of the book.

### Other Rules that may apply to your workplace

- The WISHA Safety and Health Core Rules, Chapter 296-800 WAC, contain the basic requirements that apply to most employers in Washington. They also contain:
  - An Introduction that lists important information you should know, including a section on building, fire and electrical codes.
  - A Resource section that includes a complete list of all WISHA rules and a directory of the Labor and Industries (L&I) offices.
- Other WISHA rules may apply to you, depending on the activities and operations of your workplace. Contact your local L&I office if you're uncertain about which WISHA requirements apply to you.
- To go online to access all the Safety and Health Rules: <http://www.lni.wa.gov/wisha>
- If you would like to receive e-mail notification of rule updates, please register for the Standards Listserv on the WISHA web site at <http://www.lni.wa.gov/home/listservs.htm>
- For a CD or paper copy contact us by:

Mail: Department of Labor and Industries  
P.O. Box 44620  
Olympia, WA 98504-4620

Telephone: 1-800-4BE-SAFE (1-800-423-7233)

# Formaldehyde

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# Formaldehyde

Chapter 296-856 WAC

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# Formaldehyde

WAC 296-856-100

## Scope

This chapter applies to all occupational exposure to formaldehyde. Formaldehyde includes formaldehyde gas, its solutions, and materials that release formaldehyde.



### Definitions:

**Formaldehyde** is an organic chemical with the formula of HCHO, represented by the chemical abstract service (CAS) registry number 50-00-0. Examples of primary uses of formaldehyde and its solutions are as follows:

An intermediate in the production of:

- Resins.
- Industrial chemicals.
- A bactericide or fungicide.
- A preservative.
- A component in the production of end-use consumer items such as cosmetics, shampoos, and glues.

**Exposure** is the contact an employee has with formaldehyde, whether or not protection is provided by respirators or other personal protective equipment (PPE). Exposure can occur through various routes of entry such as inhalation, ingestion, skin contact, or skin absorption.

Some of the requirements in this chapter may not apply to every workplace with an occupational exposure to formaldehyde. At a minimum, you need to:

- Follow requirements in the basic rules sections, WAC 296-856-20010 through 296-856-20070.
- Use employee exposure monitoring results required by Exposure evaluation, WAC 296-856-20060.
- Follow Table 1 to find out which additional sections of this chapter apply to your workplace.

– Continued–





# Formaldehyde

WAC 296-856-100

## Scope

WAC 296-856-100

### Scope (continued)

**Table 1**  
**Sections That Apply to Your Workplace**

If	Then continue to follow the basic rules, and the additional requirements in
<ul style="list-style-type: none"> <li>Employee exposure monitoring results are above the 8-hour time weighted average (<math>TWA_8</math>) or short term exposure limit (STEL)</li> </ul>	<ul style="list-style-type: none"> <li>Exposure and medical monitoring, WAC 296-856-30010 through 296-856-30050</li> <li><b>and</b></li> <li>Exposure control areas, WAC 296-856-40010 through 296-856-40030.</li> </ul>
<ul style="list-style-type: none"> <li>Employee exposure monitoring results are:               <ul style="list-style-type: none"> <li>– Below the <math>TWA_8</math> and STEL</li> <li><b>and</b></li> <li>– Above the action level (AL)</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Exposure and medical monitoring, WAC 296-856-30010 through 296-856-30050</li> </ul>
<ul style="list-style-type: none"> <li>Employee exposure monitoring results are below the AL and STEL</li> </ul>	<ul style="list-style-type: none"> <li>Exposure and medical monitoring, WAC 296-856-30020 through 296-856-30050</li> </ul>



# Basic Rules

WAC 296-856-200

## Section Contents

### YOUR RESPONSIBILITY:

To measure and minimize employee exposure to formaldehyde

### IMPORTANT:

The requirements in basic rules apply to all employers covered by the scope of this chapter. Additional sections may apply to you. Turn to the scope and follow Table 1 in that section to determine the additional sections of this chapter that apply to you.

Preventive practices	
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# Basic Rules

WAC 296-856-200

## Rule

WAC 296-856-20010

### Preventive practices

#### You must

- Make sure containers of gasses, solutions, or materials composed of greater than 0.1 percent formaldehyde, **and** capable of releasing formaldehyde at concentrations greater than 0.1 ppm to 0.5 ppm, are properly labeled, tagged, or marked with all of the following:
  - That the product contains formaldehyde.
  - The name and address of the responsible party (for example manufacturer, importer, or employer).
  - A statement that the physical and health hazard information can be obtained from you, and from the material safety data sheet (MSDS).
- Label, tag, or mark containers and materials capable of releasing formaldehyde at levels above 0.5 ppm as follows:
  - Include the words on the label "Potential Cancer Hazard."
  - Follow the requirements for labels found in the following separate chapters:
    - The Safety and Health Core Rules, Employer Chemical Hazard Communications, WAC 296-800-170.
    - Material Safety Data Sheet and Label Preparation, Chapter 296-839 WAC.
- Make sure you have a housekeeping and maintenance program to detect leaks and spills by doing at least the following:
  - Regular visual inspections.
  - Preventive maintenance of equipment, that includes surveys for leaks, at regular intervals.
  - In areas where spills could occur, make resources available to contain the spills, decontaminate the area affected, and dispose of waste.

– Continued–



WAC 296-856-20010

### Preventive practices (continued)

- Promptly repair leaks and clean up spills.
- Train employees who will clean spills and repair leaks, about the methods for cleanup and decontamination.
- Make sure employees who will clean up spills and repair leaks, have the appropriate personal protective equipment and respirators.
- Dispose of waste from spills or leaks in sealed containers marked with information that states the contents contain formaldehyde and the hazards associated with formaldehyde exposure.
- Develop and implement appropriate procedures to minimize injury and loss of life if there is a possibility of an emergency, such as an uncontrolled release of formaldehyde.



#### Note:

Following the requirements of a separate chapter, Emergency Response, Chapter 296-824 WAC, will meet the requirements for emergency procedures.

- Provide emergency washing facilities, for formaldehyde exposures, as required by a separate chapter, the Safety and Health Core Rules, First aid, WAC 296-800-150, as follows:
  - Emergency showers in the immediate work areas where skin contact to solutions of 1 percent or greater of formaldehyde could occur.
  - Emergency eye wash in the immediate work area where an eye contact to solutions of 0.1 percent or greater of formaldehyde could occur.



#### Reference

For additional requirements about spills, leaks, or other releases, go to Emergency Response, Chapter 296-824 WAC, a separate chapter.



# Basic Rules

WAC 296-856-200

## Rule

WAC 296-856-20020

### Training



#### Exemption:

Training isn't required for employees when you have conclusive documentation that they can't be exposed to formaldehyde at airborne concentrations above 0.1 parts per million (ppm).

#### You must

- Provide training and information to employees exposed to formaldehyde at all of the following times:
  - At the time of initial assignment to a work area where there is formaldehyde exposure.
  - Whenever there is a new exposure to formaldehyde in their work area.
  - At least every 12 months after initial training.
- Make sure training includes at least the following:
  - The contents of this chapter and MSDS for formaldehyde.
  - The purpose of medical evaluations and a description of how you are fulfilling the medical evaluation requirements of this chapter.
  - The health hazards and signs and symptoms associated with formaldehyde exposure, including:
    - Cancer hazard.
    - Skin and respiratory system irritant and sensitizer.
    - Eye and throat irritation.
    - Acute toxicity.
  - How employees will immediately report any signs or symptoms suspected to be from formaldehyde exposure.
  - Descriptions of operations where formaldehyde is present.

– Continued–



WAC 296-856-20020

### Training (continued)

- Explanations of safe work practices to limit employee exposure to formaldehyde for each job.
  - The purpose, proper use, and limitations of personal protective clothing.
  - Instructions for the handling of spills, emergencies, and clean-up procedures.
  - An explanation of the importance of exposure controls, and instructions in the use of them.
  - A review of emergency procedures, including the specific duties or assignments of each employee in the event of an emergency.
  - The purpose, proper use, limitations, and other training requirements for respiratory protection, as required by a separate chapter, *Respirators, Chapter 296-842 WAC*.
- Make sure any written training materials are readily available to your employees at no cost.



#### Reference

- For additional training and information requirements that may apply to your work activities, go to Respirators, Chapter 296-842 WAC, a separate chapter
- For a list of hazard communication training topics, go to the Safety and Health Core Rules, *Inform and Train Your Employees about Hazardous Chemicals in Your Workplace*, WAC 296-800-17030, a separate chapter.



#### Helpful Tool

For additional training information, see the Substance Technical Guideline for Formaldehyde, Medical Surveillance, and the Medical Disease Questionnaire found in the Resources section of this chapter.



# Basic Rules

WAC 296-856-200

## Rule

WAC 296-856-20030

### Personal protective equipment (PPE)

#### You must

- Provide PPE at no cost to employees and make sure employees wear the equipment.
- Make sure that employees don't take contaminated clothing or other PPE from the workplace.
- Select PPE that's appropriate for your workplace based on at least the following:
  - The form of formaldehyde, such as gas, solution, or material.
  - The conditions of use.
  - The hazard to be prevented.
- Provide full body protection for entry into areas where formaldehyde exposure could exceed 100 parts per million (ppm) or when airborne concentrations are unknown.
- Protect employees from all contact with liquids containing one percent or more of formaldehyde by providing chemical protective clothing that's impervious to formaldehyde and other personal protective equipment, such as goggles and face shields, as appropriate for the operation.
- Make sure when face shields are worn, employees also wear chemical safety goggles if there could be eye contact with formaldehyde.
- Make sure contaminated clothing and other PPE is cleaned or laundered before it's used again.
- Repair or replace clothing and other PPE as needed to maintain effectiveness.
- Make sure storage areas for ventilating contaminated clothing and PPE are established to minimize employee exposure to formaldehyde.

– Continued–



WAC 296-856-20030

### Personal protective equipment (PPE) (continued)

#### You must

- Make sure storage areas and containers for contaminated clothing and PPE have labels or signs with the following warning:

**DANGER**  
**Formaldehyde-contaminated (clothing) or equipment**  
**Avoid inhalation and skin contact**

- Make sure that only employees trained to recognize the hazards of formaldehyde remove personal protective equipment (PPE) and clothing from storage areas for the purposes of disposal, cleaning, or laundering.
- Inform any person who launders, cleans, or repairs contaminated clothing or other PPE, of the hazards of formaldehyde and procedures to safely handle the clothing and equipment.
- Provide change rooms for employees who are required to change from work clothes into protective clothing to protect them from skin contact with formaldehyde.
- Make sure change rooms have separate storage facilities for street clothes and protective clothing.



#### References:

- For additional PPE requirements, go to the Safety and Health Core Rules, Personal Protective Equipment (PPE), WAC 296-800-160, a separate chapter.
- For additional requirements pertaining to change rooms, go to Hazardous Waste, *Provide Showers and Changing Rooms*, WAC 296-843-15010, a separate chapter.
- For additional information regarding respirators, go to Respirators, Chapter 296-842 WAC, a separate chapter.



# Basic Rules

WAC 296-856-200

## Rule

WAC 296-856-20040

### Employee protective measures

#### You must

- Implement appropriate protective measures while you conduct your exposure evaluation.
  - Employees performing activities with exposure to airborne formaldehyde that could exceed the 0.75 ppm, 8-hour time weighted average (TWA<sub>8</sub>), or the 2 ppm 15-minute short-term exposure limit (STEL), need to follow the requirements in WAC 296-856-30010 through 296-856-40030 of this chapter.



#### Reference:

For respirator requirements, turn to Respirators, WAC 296-856-40030.





WAC 296-856-20050

### Exposure evaluations

#### IMPORTANT:

- This section applies when there is a potential for an employee to be exposed to airborne formaldehyde in your workplace.
- When you conduct an exposure evaluation in a workplace where an employee uses a respirator, the protection provided by the respirator isn't considered.
- Following this section will fulfill the requirements to identify and evaluate respiratory hazards found in a separate chapter, *Respiratory Hazards, Chapter 296-841 WAC*.

#### You must

- Conduct an employee exposure evaluation to accurately determine airborne concentrations of formaldehyde by completing Steps 1 through 7 of the exposure evaluation process, each time any of the following apply:
  - No evaluation has been conducted.
  - Changes have occurred in any of the following areas that may result in new or increased employee exposures:
    - Production
    - Processes
    - Exposure controls, such as ventilation systems or work practices
    - Personnel
    - Equipment
  - You have any reason to suspect new or increased employee exposure may occur.
  - You receive a report of employee developing signs and symptoms associated with formaldehyde exposure.

– Continued–



# Basic Rules

WAC 296-856-200

## Rule

WAC 296-856-20050

### Exposure evaluations (continued)

#### You must

- Provide affected employees or their designated representatives an opportunity to observe exposure monitoring required by this chapter.
- Make sure observers entering areas with formaldehyde exposure:
  - Are provided with and use the same protective clothing, respirators, and other personal protective equipment (PPE) that employees working in the area are required to use**and**
  - Follow any safety and health requirements that apply.

#### EXPOSURE EVALUATION PROCESS:



##### Exemption:

- Exposure monitoring isn't necessary if you have documentation conclusively demonstrating that employee exposure for a particular material and the operation where it's used, can't exceed the action level (AL) or short-term exposure limit (STEL) during any conditions reasonably anticipated.
- Such documentation can be based on observations, data, calculations, and previous air monitoring results. Previous air monitoring results:
  - Must meet the accuracy required by Step 5.
  - Must be based on data that represents conditions being evaluated in your workplace.
  - May be from outside sources, such as industry or labor studies.

**Step 1:** Identify all employees who have potential exposure to airborne formaldehyde in your workplace.

– Continued –



WAC 296-856-20050

### Exposure evaluations (continued)

**Step 2:** Identify operations where employee exposures could exceed the 15-minute short-term exposure limit (STEL) for formaldehyde of 2 parts per million (ppm).



**Note:**

- You may use monitoring devices such as colorimetric indicator tubes or real-time monitors to screen for activities where employee exposures could exceed the STEL.

**Step 3:** Select employees from those working in the operations you identified in Step 2 who will have their 15-minute exposures monitored.

**Step 4:** Select employees from those identified in Step 1 who will have their 8-hour exposures monitored.

- Make sure the exposures of the employees selected represent 8-hour exposures for all employees identified in Step 1, including each job activity, work area, and shift.
- If you expect exposures to be **below** the action level (AL), you may limit your selection to those employees reasonably believed to have the highest exposures.
- If you find any of those employees' exposure to be **above** the AL, then you need to repeat monitoring to include each job activity, work area, and shift.



**Reference:**

A written description of the procedure used for obtaining representative employee exposure monitoring results needs to be kept as part of your exposure records, as required by Exposure Records, WAC 296-856-20070.

This description can be created while completing Steps 3 through 6 of this exposure evaluation process.



# Basic Rules

WAC 296-856-200

## Rule

WAC 296-856-20050

### Exposure evaluations (continued)

**Step 5:** Determine how you will obtain accurate employee exposure monitoring results. Select and use an air monitoring method with a confidence level of 95 percent, that's accurate to:

- $\pm 25$  percent when concentrations are potentially above the TWA of 0.75 parts per million (ppm).
- $\pm 25$  percent when concentrations are potentially above the STEL of 2 ppm.
- $\pm 35$  percent when concentrations are potentially above the AL.



**Note:**

Here are examples of air monitoring methods that meet this accuracy requirement:

- OSHA Method 52 found at <http://www.osha.gov/dts/sltc/methods/toc.html>.
- NIOSH methods: 2016, 2514, 3500, 2539, and 5700, found at <http://www.cdc.gov/niosh/homepage.html> and linking to the NIOSH Manual of Analytical Methods.
- Direct reading methods found at <http://www.osha.gov/SLTC/formaldehyde/index.html>

– Continued–

WAC 296-856-20050

### Exposure evaluations (continued)

**Step 6:** Obtain employee exposure monitoring results by collecting air samples to accurately determine the formaldehyde exposure of employees identified in Steps 3 and 4.

- Make sure samples are collected from each selected employee's breathing zone.



**Note:**

- You may use any sampling method that meets the accuracy specified in Step 5. Examples of these methods include:
  - Real-time monitors that provide immediate exposure monitoring results.
  - Equipment that collects samples that are sent to a laboratory for analysis.
- The following are examples of methods for collecting samples representative of 8-hour exposures.
  - Collect one or more continuous samples, such as a single 8-hour sample or four 2-hour samples.
  - Take a minimum of 5 brief samples, such as five 15-minute samples, during the work shift at randomly selected times.
- For work shifts longer than 8 hours, monitor the continuous 8-hour portion of the shift expected to have the highest average exposure concentration.



– Continued–

# Basic Rules

WAC 296-856-200

## Rule

WAC 296-856-20050

### Exposure evaluations (continued)

- Step 7:** Have the samples you collected analyzed to obtain employee exposure monitoring results for 8-hour and short-term exposure limits (STEL) exposures.
- Determine if employee exposure monitoring results are above or below the following values:
    - 8-hour action level (AL) of 0.5 ppm.
    - 8-hour time-weighted average (TWA<sub>8</sub>) of 0.75 ppm.
    - 15-minute short-term exposure limit (STEL) of 2 ppm.



#### Reference:

To use the monitoring results to determine which additional chapter sections apply to employee exposure in your workplace, turn to the Scope, WAC 296-856-100, and follow Table 1 in that section.



#### Note:

- You may contact your local WISHA consultant for help with:
  - Interpreting data or other information.
  - Determining 8-hour employee exposure monitoring results.
- To contact a WISHA consultant:
  - Go to the ***Safety and Health Core Rules, Chapter 296-800 WAC***  
**and**
  - Find the Resources section, and under “other resources,” find service locations for Labor and Industries.

WAC 296-856-20060

### Notification

#### You must

- Provide written notification of exposure monitoring results to employees represented by your exposure evaluation, within 5 business days after the results become known to you.
  - In addition, when employee exposure monitoring results are above the permissible exposure limits (PEL), of either the 8-hour time weighted average (TWA<sub>8</sub>) or the 15-minute short-term exposure limit (STEL), provide written notification of both of the following within 15 business days after the results become known to you:
    - Corrective actions being taken and a schedule for completion.
    - Any reason why exposures can't be lowered to below the PEL.



#### Note:

- You can notify employees either individually or post the notifications in areas readily accessible to affected employees.
- Posted notification may need specific information that allows affected employees to determine which monitoring results apply to them.
- Notification may be:
  - In any written form, such as handwritten or e-mail.
  - Limited to the required information, such as exposure monitoring results.
- When notifying employees about corrective actions, your notification may refer them to a separate document that's available and provides the required information.



# Basic Rules

WAC 296-856-200

## Rule

WAC 296-856-20070

### Exposure records

#### You must

- Establish and keep complete and accurate records for all exposure monitoring conducted under this chapter. Make sure the record includes at least the following:
  - The name, unique identifier, and job classification of both:
    - The employee sampled
    - **and**
    - All other employees represented by the sampled employee.
  - An estimate of the exposure for each employee “represented” by this monitoring.
  - A description of the methods used to obtain exposure monitoring results and evidence of the method’s accuracy.
  - Any environmental conditions that could affect exposure concentration measurements.
  - A description of the procedure used to obtain representative employee exposure monitoring results.
  - The operation being monitored.
  - The date, number, duration, location, and the result of each sample taken.
  - The type of protective devices worn.
- Maintain documentation that conclusively demonstrates that employee exposure for formaldehyde and the operation where it’s used can’t exceed the action level or the 15-minute short-term exposure limit, during any reasonable anticipated conditions.
  - Such documentation can be based on observations, data, calculation, and previous air monitoring results.
- Keep exposure monitoring records for at least 30 years.



#### Reference:

For additional requirements that apply to employee exposure records, including access and transfer requirements, go to Employee Medical and Exposure Records, Chapter 296-802 WAC, a separate chapter.





# Exposure and Medical Monitoring

WAC 296-856-300

## Section Contents

### YOUR RESPONSIBILITY:

**To monitor employee health and workplace exposures to formaldehyde**

Periodic exposure evaluations WAC 296-856-30010.....	300-2
Medical and emergency evaluations WAC 296-856-30020.....	300-4
Medical removal WAC 296-856-30030.....	300-9
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# Exposure and Medical Monitoring

WAC 296-856-300

## Rule

WAC 296-856-30010

### Periodic exposure evaluations



#### Exemption:

Periodic employee exposure monitoring isn't required if exposure monitoring results conducted to fulfill requirements in this chapter, Exposure evaluations, WAC 296-856-20050, are below both the action level (AL) and 15-minute short-term exposure limit (STEL).

### You must

- Obtain employee exposure monitoring results as specified in Table 2 by repeating Steps 1 and 7 of the exposure evaluation process found within this chapter, in Exposure evaluations, WAC 296-856-20050.



#### Note:

If you document that one work shift consistently has higher exposure monitoring results than another for a particular operation, then you may limit sample collection to the work shift with higher exposures and use those results to represent all employees performing the operation on other shifts.



– Continued–

# Exposure and Medical Monitoring

WAC 296-856-300

## Rule

WAC 296-856-30010

### Periodic exposure evaluations (continued)

**Table 2**  
**Periodic Exposure Evaluation Frequencies**

If employee exposure monitoring results	Then
Are above the action level (AL) of 0.5 ppm	Conduct additional exposure monitoring at least every 6 months for the employees represented by the monitoring results
Are above the short-term exposure limit (STEL) of 2 ppm	Repeat exposure monitoring at least once a year, or more often as necessary to evaluate employee exposure
Have decreased to below the AL <b>and</b> the STEL <b>and</b> The decrease is demonstrated by 2 consecutive exposure evaluations made at least 7 days apart	You may <b>stop</b> periodic employee exposure monitoring for employees represented by the monitoring results.  <b>Note:</b> You need to monitor again if there is a change in any of the following that may result in new or increased employee exposures: <ul style="list-style-type: none"><li>– Production</li><li>– Processes</li><li>– Exposure controls such as ventilation systems or work practices</li><li>– Personnel</li><li>– Equipment</li></ul>



# Exposure and Medical Monitoring

WAC 296-856-300

## Rule

WAC 296-856-30020

### Medical and emergency evaluations

#### IMPORTANT:

Medical evaluations completed to meet the respirator use requirements of this section also need to meet the requirements found in a separate chapter, *Respirators, Medical Evaluations, WAC 296-842-140*.

#### You must

- Make medical evaluations available to current employees who:
  - Are exposed to formaldehyde concentrations above the action level (AL) or short-term exposure limit (STEL).
  - Are exposed to formaldehyde during an emergency situation.
  - Develops signs and symptoms commonly associated with formaldehyde exposure.
- Make medical examinations available to current employees as deemed necessary by the LHCP after reviewing the medical disease questionnaire for employees that are presently not required to wear a respirator.
- Complete Steps 1 through 4 of the medical evaluation process at the following times:
  - Initially, when employees are assigned to work in an area where exposure monitoring results are above the action level (AL) or above the STEL.
  - At least every 12 months from the initial medical evaluation for employees exposed to formaldehyde above the action level (AL) or the STEL.
  - Whenever the employee develops signs and symptoms commonly associated with formaldehyde.



#### Note:

Signs and symptoms are rarely associated with formaldehyde concentrations in air less than 0.1 parts per million (ppm), and in materials at concentration levels less than 0.1 percent.

– Continued–

# Exposure and Medical Monitoring

WAC 296-856-300

## Rule

WAC 296-856-30020

### Medical and emergency evaluations (continued)

#### You must

- Make medical evaluations available:
  - At no cost to employees, including travel costs and wages associated with any time spent obtaining the medical evaluation.
  - At reasonable times and places.



#### Note:

- Employees who decline to receive a medical evaluation to monitor for health effects caused by formaldehyde aren't excluded from receiving a separate medical evaluation for respirator use.
- If employers discourage participation in medical monitoring for health effects caused by formaldehyde, or in any way interferes with an employee's decision to continue with this program, this interference may represent unlawful discrimination under RCW 49.17.160, Discrimination against employee filing complaint, instituting proceedings, or testifying prohibited-Procedure-Remedy.

#### MEDICAL EVALUATION PROCESS:

- Step 1:** Select a licensed healthcare professional (LHCP) who will conduct or supervise examinations and procedures.
- If the LHCP isn't a licensed physician, make sure individuals who conduct pulmonary function tests, have completed a training course in spirometry, sponsored by an appropriate governmental, academic, or professional institution.



#### Note:

The LHCP must be a licensed physician or supervised by a physician.

– Continued–



# Exposure and Medical Monitoring

WAC 296-856-300

## Rule

WAC 296-856-30020

### Medical and emergency evaluations (continued)

- Step 2:** Make sure the LHCP receives all of the following information before the medical evaluation is performed:
- A copy of this chapter.
  - The helpful tools: *Substance Technical Guideline for Formaldehyde, Medical Surveillance, and Medical Disease Questionnaire*.
  - A description of the duties of the employee being evaluated and how these duties relate to formaldehyde exposure.
  - The anticipated or representative exposure monitoring results for the employee being evaluated.
  - A description of the personal protective equipment (PPE) and respiratory protection each employee being evaluated uses or will use.
  - Information in your possession from previous employment-related examinations when this information isn't available to the examining LHCP.
  - A description of the emergency and the exposure, when an examination is provided due to an exposure received during an emergency.
  - Instructions that the written opinions the LHCP provides to you, **does not** include any diagnosis or other personal medical information, **and** is limited to the following information:
    - The LHCP's opinion about whether or not medical conditions were found that would increase the employee's risk for impairment from exposure to formaldehyde.
    - Any recommended limitations for formaldehyde exposure and use of respirators or other PPE.
    - A statement that the employee has been informed of medical results and medical conditions caused by formaldehyde exposure requiring further examination or treatment.
- Step 3:** Make a medical evaluation available to the employee. Make sure it includes the content listed in Table 3, Content of Medical Evaluations.

– Continued–



# Exposure and Medical Monitoring

WAC 296-856-300

## Rule

WAC 296-856-30020

### Medical and emergency evaluations (continued)

- Step 4:** Obtain the LHCP's written opinion for the employee's medical evaluation and make sure the employee receives a copy within 5 business days after you receive the written opinion.
- Make sure the written opinion is limited to the information specified for written opinions in Step 2.



**Note:**

If the written opinion contains specific findings or diagnoses unrelated to occupational exposure, send it back and obtain a revised version without the additional information.

– Continued–



# Exposure and Medical Monitoring

WAC 296-856-300

## Rule

WAC 296-856-30020

### Medical and emergency evaluations (continued)

**Table 3**  
**Content of Medical Evaluations**

When conducting an	Include
Initial or Annual evaluation	<ul style="list-style-type: none"><li>• A medical disease questionnaire that provides a work and medical history with emphasis on:<ul style="list-style-type: none"><li>– Upper or lower respiratory problems</li><li>– Allergic skin conditions or dermatitis</li><li>– Hyper reactive airway diseases</li><li>– Eyes, nose, and throat irritation</li></ul></li><li>• Physical examinations deemed necessary by the LHCP, that include at a minimum:<ul style="list-style-type: none"><li>– Examinations with emphasis on evidence of irritation or sensitization of skin, eyes, and respiratory systems, and shortness of breath</li><li>– Counseling, provided by the LHCP to the employee as part of the medical examination if the LHCP determines that the employee has a medical condition that may be aggravated by formaldehyde exposure</li></ul></li><li>• Pulmonary function tests for respirator users, that include at a minimum:<ul style="list-style-type: none"><li>– Forced vital capacity (FVC)</li><li>– Forced expiratory volume in one second (FEV1)</li><li>– Forced expiratory flow (FEF)</li></ul></li></ul>
Emergency exposure evaluation	<ul style="list-style-type: none"><li>• A medical evaluation that includes a work history with emphasis on evidence of upper or lower respiratory problems, allergic conditions, skin reaction, or hypersensitivity, and any evidence of eye, nose, or throat irritation</li><li>• Additional examinations the licensed healthcare professional (LHCP) believes appropriate, based on the employee's exposure to formaldehyde</li></ul>
Evaluation of reported signs and symptoms	<ul style="list-style-type: none"><li>• A medical disease questionnaire that provides a work and medical history with emphasis on:<ul style="list-style-type: none"><li>– Upper or lower respiratory problems</li><li>– Allergic skin conditions or dermatitis</li><li>– Hyper reactive airway diseases</li><li>– Eyes, nose, and throat irritation</li></ul></li><li>• A physical examination if considered necessary by the LHCP that includes at a minimum:<ul style="list-style-type: none"><li>– Examinations with emphasis on evidence of irritation or sensitization of skin, eyes, respiratory systems, and shortness of breath</li><li>– Counseling if the LHCP determines that the employee has a medical condition that may be aggravated or caused by formaldehyde exposure</li></ul></li></ul>



# Exposure and Medical Monitoring

WAC 296-856-300

## Rule

WAC 296-856-30030

### Medical removal



#### Exemption:

Medical removal or restrictions don't apply when skin irritation or skin sensitization occurs from products that contain less than 0.05 percent of formaldehyde.

### IMPORTANT:

- This section applies when an employee reports irritation of the mucosa of the eye or the upper airways, respiratory sensitization, dermal irritation, or skin sensitization from formaldehyde exposure.
- When determining the content of formaldehyde in materials that employees have exposure to, you may use documentation, such as manufacturer's data, or independent laboratory analyses.

### You must

- Complete Steps 1 through 4 of the medical evaluation process for removal of employees, in this section, for employees that report signs and symptoms of formaldehyde exposure.



#### Note:

When the employee is exposed to products containing less than 0.1 percent formaldehyde, the LHCP can assume, absent of contrary evidence, that employee signs and symptoms aren't due to formaldehyde exposure.

– Continued–



# Exposure and Medical Monitoring

WAC 296-856-300

## Rule

WAC 296-856-30030

### Medical removal (continued)

#### MEDICAL EVALUATION PROCESS FOR REMOVAL OF EMPLOYEES:

- Step 1:** Provide the employee with a medical evaluation by an LHCP selected by the employer.
- Step 2:** Based on information in the medical questionnaire the LHCP will determine if the employee will receive an examination as described in Table 3, Content of Medical Evaluations, in Medical and emergency evaluations, WAC 296-856-30020.
- If the LHCP determines that a medical examination isn't necessary, there will be a 2-week evaluation and correction period to determine whether the employee's signs and symptoms resolve without treatment, from the use of creams, gloves, first-aid treatment, personal protective equipment, or industrial hygiene measures that reduce exposure.
    - If before the end of the 2-week period the employee's signs or symptoms worsen, immediately refer them back to the LHCP.
    - If signs and symptoms persist after the 2-week period, the LHCP will administer a physical examination as outlined in Table 3, Content of Medical Evaluations, in Medical and emergency evaluations, WAC 296-856-30020.
- Step 3:** Promptly follow the LHCP's restrictions or recommendations. If the LHCP recommends removal from exposure, do either of the following:
- Transfer the employee to a job currently available that:
    - The employee qualifies for, or could be trained for, in a short period of time (up to 6 months)
    - and**
    - Will keep the employee's exposure to as low as possible, and never above the AL of 0.5 parts per million.
  - Remove the employee from the workplace until either:
    - A job becomes available that the employee qualifies for, or could be trained for in a short period of time **and** will keep the employee's exposure to as low as possible and never above the AL
    - or**
    - The employee is returned to work or permanently removed from formaldehyde exposure, as determined by completing Steps 1 through 3 of the medical evaluation process for removal of employees, in this section.

– Continued –

# Exposure and Medical Monitoring

WAC 296-856-300

## Rule

WAC 296-856-30030

### Medical removal (continued)

**Step 4:** Make sure the employee receives a follow-up examination within 6 months from being removed from the formaldehyde exposure by the LHCP. At this time, the LHCP will determine if the employee can return to their original job status, or if the removal is permanent.

### You must

- Maintain the employee's current pay rate, seniority, and other benefits if:
  - You move them to a job that they qualify for, or could be trained in a short period of time, and will keep the employee's exposure to as low as possible and never above the AL
- or**
- In the case there is no such job available, then until they are able to return to their original job status or after 6 months, whichever comes first.



#### Note:

- If you must provide medical removal benefits and the employee will receive compensation for lost pay from other sources, you may reduce your medical removal benefit obligation to offset the amount provided by these sources.
- Examples of other sources are:
  - Public or employer-funded compensation programs.
  - Employment by another employer, made possible by the employee's removal.
- Make medical evaluations available:
  - At no cost to employees, including travel costs and wages associated with any time spent obtaining the medical examinations and evaluations.
  - At reasonable times and places.



# Exposure and Medical Monitoring

WAC 296-856-300

## Rule

WAC 296-856-30040

### Multiple LHCP review

#### IMPORTANT:

This section applies each time a medical examination or consultation is performed to determine whether medical removal or restriction is required.

#### You must

- Promptly notify employees that they may seek a second medical opinion from an LHCP of their choice, each time a medical examination or consultation is conducted by an LHCP selected by the employer to evaluate medical removal.
  - At a minimum, this notification must include the details of your multiple physician review process.



**Note:**

Notification may be provided in writing or by verbal communication.

#### You must

- Complete requirements in the multiple LHCP review process once you have been informed of an employee's decision to seek a second medical opinion.
- Pay for and complete the multiple LHCP review process for employees who:
  - Inform you in writing or by verbal communication that they will seek a second medical opinion.
  - Initiate steps to make an appointment with the LHCP they select. This LHCP will be referred to as the second LHCP.
  - Fulfill the previous actions to inform you, and initiate steps for an appointment, within 15 days from receiving either your notification or the initial LHCP's written opinion, whichever is received later.



**Note:**

This process allows for selection of a second LHCP and, when disagreements between LHCPs persist, for selection of a third LHCP.

– Continued–

# Exposure and Medical Monitoring

WAC 296-856-300

## Rule

WAC 296-856-30040

### Multiple LHCP review (continued)

#### MULTIPLE LHCP REVIEW PROCESS:

- Step 1:** Make sure the information required by Step 4 of the medical evaluation process is received by the second LHCP. This process is located in the section, Medical and emergency evaluations, WAC 296-856-30020.
- This requirement also applies when a third LHCP is selected.
- Step 2:** Allow the second LHCP to:
- Review findings, determinations, or recommendations from the original LHCP you selected
  - and**
  - Conduct medical examinations, consultations, and laboratory tests as necessary to complete their review.
- Step 3:** Obtain a written opinion from the second LHCP and make sure the employee receives a copy within 5 business days from the date you receive it. If findings, determinations, and recommendations in the written opinion are:
- Consistent with the written opinion from the initial LHCP, you can end the multiple physician review process. Make sure you follow the LHCP's recommendations.
  - Inconsistent with the written opinion from the initial LHCP, then you and the employee must make sure efforts are made for the LHCPs to resolve any disagreements.
    - If the LHCPs quickly resolve disagreements, you can end the multiple physician review process. Make sure you follow the LHCP's recommendations.
    - If disagreements aren't resolved within 30 business days, continue to Step 4.

– Continued–



# Exposure and Medical Monitoring

WAC 296-856-300

## Rule

WAC 296-856-30040

### Multiple LHCP review (continued)

- Step 4:** You and the employee must work through your respective LHCPs to agree on the selection of a third LHCP, or work together to designate a third LHCP to:
- Review findings, determinations, or recommendations from the initial and second LHCP
- and**
- Conduct medical examinations, consultations, and laboratory tests as necessary to resolve disagreements between the initial and second LHCP.
- Step 5:** Obtain a written opinion from the third LHCP and make sure the employee receives a copy within 5 business days from the day you receive it.
- Follow the third LHCP's recommendations, unless you and the employee agree to follow recommendations consistent with at least one of the 3 LHCPs.



# Exposure and Medical Monitoring

WAC 296-856-300

## Rule

WAC 296-856-30050

### Medical records

#### IMPORTANT:

This section applies when a medical evaluation is performed or any time a medical record is created for an employee exposed to formaldehyde.

#### You must

- Establish and maintain complete and accurate medical records for each employee receiving a medical evaluation for formaldehyde and make sure the records include all the following:
  - The employee's name and unique identifier.
  - A description of any health complaints that may be related to formaldehyde exposure.
  - A copy of the licensed healthcare professional's (LHCP's) written opinions.
  - Exam results.
  - Medical questionnaires.
- Maintain medical records for the duration of employment plus 30 years.



#### Note:

- Employee medical records need to be maintained in a confidential manner. The medical provider may keep these records for you.
- Medical records may only be accessed with the employee's written consent.



#### Reference:

For additional requirements that apply to employee exposure records, including access and transfer requirements, go to Employee Medical and Exposure Records, Chapter 296-802 WAC, a separate chapter.



# Exposure Control Areas

WAC 296-856-400

## Section Contents

### YOUR RESPONSIBILITY:

**To control employee exposure to airborne formaldehyde and protect employees by using appropriate respirators**

### IMPORTANT:

These sections apply when employee exposure monitoring results are above the permissible exposure limit (PEL):

- The 8-hour time-weighted average (TWA<sub>8</sub>) of 0.75 parts per million (ppm)
- **or**
- The 15-minute short-term exposure limit (STEL) of 2 parts per million (ppm).

Exposure controls	
WAC 296-856-40010.....	400-2
Establishing exposure control areas	
WAC 296-856-40020.....	400-3
Respirators	
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# Exposure Control Areas

WAC 296-856-400

## Rule

WAC 296-856-40010

### Exposure controls

#### IMPORTANT:

Respirators and other personal protective equipment (PPE) are **not** exposure controls.

#### You must

- Use feasible exposure controls to reduce employee exposures to a level below the permissible exposure limit (PEL) or to as low a level as achievable.



#### Reference:

For example of exposure controls, go to Respiratory Hazards, Chapter 296-841 WAC and find the section, *Control Employee Exposures*, WAC 296-841-20010.

# Exposure Control Areas

WAC 296-856-400

## Rule

WAC 296-856-40020

### Establishing exposure control areas

#### You must

- Establish temporary or permanent exposure control areas where airborne concentrations of formaldehyde are above either the 8-hour time weighted average (TWA<sub>8</sub>) or the 15-minute short-term exposure limit (STEL), by doing at least the following:
  - Clearly identify the boundaries of exposure control areas in any way that minimizes employee access.
  - Post signs at access points to exposure control areas that:
    - Are easy to read (for example, they are kept clean and well lit)
    - **and**
    - Include this warning:

**DANGER**  
**Formaldehyde**  
**Irritant and Potential Cancer Hazard**  
**Authorized Personnel Only**



#### Note:

This requirement doesn't prevent you from posting other signs.

– Continued–



# Exposure Control Areas

WAC 296-856-400

## Rule

WAC 296-856-40020

### Establishing exposure control areas (continued)

#### You must

- Allow only employees, who have been trained to recognize the hazards of formaldehyde exposure, to enter exposure control areas.



#### Note:

- When identifying the boundaries of exposure control areas you should consider factors such as:
  - The level and duration of airborne exposure.
  - Whether the area is permanent or temporary.
  - The number of employees in adjacent areas.
- You may use permanent or temporary enclosures, caution tape, ropes, painted lines on surfaces, or other materials to visibly distinguish exposure control areas or separate them from the rest of the workplace.
- Inform other employers at multi-employer work sites of the exposure control areas, and the restrictions that apply to those areas.

# Exposure Control Areas

WAC 296-856-400

## Rule

WAC 296-856-40030

### Respirators

#### IMPORTANT:

- The requirements in this section are in addition to the requirements found in the following separate chapters:
  - Respiratory Hazards, Chapter 296-841 WAC.
  - Respirators, Chapter 296-842 WAC.
- Medical evaluations meeting all requirements of Medical and emergency evaluations, WAC 296-856-30020, will fulfill the medical evaluations requirements found in Respirators, chapter 296-842 WAC, a separate chapter.

#### You must

- Develop a written respirator program as required by a separate chapter, *Respirators, Chapter 296-842 WAC*, and include the following additional requirements:
  - Require that employees use respirators in any of the following circumstances:
    - Employees are in an exposure control area.
    - Feasible exposure controls are being put in place.
    - Where you determine that exposure controls aren't feasible.
    - Feasible exposure controls don't reduce exposures to, or below, the PEL.
    - Employees are performing tasks presumed to have exposures above the PEL.
    - Emergencies.
- Make sure all respirator use is accompanied by eye protection either through the use of full-facepiece respirators, hoods, or chemical goggles.

– Continued–



# Exposure Control Areas

WAC 296-856-400

## Rule

WAC 296-856-40030

### **Respirators (continued)**

#### **You must**

- Provide employees with powered air-purifying respirators (PAPRs) when this type of respirator will provide appropriate protection **and** any of the following applies:
  - A licensed healthcare professional (LHCP) allows this type of respirator in their written opinion.
  - The employee has difficulty using a negative pressure respirator.
  - The employee chooses to use this type of respirator.
- Make sure you replace the air-purifying chemical cartridge or canister as follows:
  - At the beginning of each work shift
  - and**
  - As required by *Respirators, Chapter 296-842 WAC*.

## Definitions

### Action level

An airborne concentration of formaldehyde of 0.5 parts per million of air calculated as an 8-hour time-weighted average.

### Authorized personnel

Individuals specifically permitted by the employer to enter the exposure control area to perform duties, or to observe employee exposure evaluations as a designated representative.

### Breathing zone

The space around and in front of an employee's nose and mouth, forming a hemisphere with a 6- to 9-inch radius.

### CAS (chemical abstract service) number

CAS numbers are internationally recognized and used on material safety data sheets (MSDSs) and other documents to identify substances. For more information see <http://www.cas.org>

### Canister or cartridge (air-purifying)

Part of an air-purifying respirator that consists of a container holding materials such as fiber, treated charcoal, or a combination of the two, that removes contaminants from the air passing through the cartridge or canister.

### Container

Any container, except for pipes or piping systems that contains formaldehyde. It can be any of the following:

- Barrel
- Bottle
- Can
- Cylinder
- Drum
- Reaction vessel
- Shipping containers
- Storage tank.





# Formaldehyde

WAC 296-856-500

## Definitions

### Designated representative

Any one of the following:

- Any individual or organization to which an employee gives written authorization.
- A recognized or certified collective bargaining agent without regard to written employee authorization.
- The legal representative of a deceased or legally incapacitated employee.

### Emergency

Any event that could or does result in the unexpected significant release of formaldehyde. Examples of emergencies include equipment failure, container rupture, or control equipment failure.

### Exposure

The contact an employee has with formaldehyde, whether or not protection is provided by respirators or other personal protective equipment (PPE). Exposure can occur through various routes of entry such as inhalation, ingestion, skin contact, or skin absorption.

### Formaldehyde

An organic chemical with the formula of  $\text{HCHO}$ , represented by the chemical abstract service (CAS) registry number 50-00-0. Examples of primary uses of formaldehyde and its solutions are as follows:

- An intermediate in the production of:
  - Resins
  - Industrial chemicals
- A bactericide or fungicide
- A preservative
- A component in the manufacture of end-use consumer items such as cosmetics, shampoos, and glues.

## Definitions

### Licensed healthcare professional (LHCP)

An individual whose legally permitted scope of practice allows him or her to provide some or all of the healthcare services required for medical evaluations.

### Permissible exposure limits (PELs)

PELs are employee exposures to toxic substances or harmful physical agents that must not be exceeded. PELs are also specified in WISHA rules found in other chapters. The PEL for formaldehyde is an 8-hour time-weighted average ( $TWA_8$ ) of 0.75 parts per million (ppm) and a 15-minute short-term exposure limit of 2 ppm.

### Short-term exposure limit (STEL)

An exposure limit averaged over a 15-minute period that must not be exceeded during an employee's workday.

### Time-weighted average ( $TWA_8$ )

An exposure limit averaged over an 8-hour period that must not be exceeded during an employee's workday.

### Uncontrolled release

A release where significant safety and health risks could be created. Releases of hazardous substances that are either incidental or couldn't create a safety or health hazard (i.e., fire, explosion, or chemical exposure) aren't considered to be uncontrolled releases.

Examples of conditions that could create a significant safety and health risk are:

- Large-quantity releases.
- Small releases that could be highly toxic.
- Potentially contaminated individuals arriving at hospitals.
- Airborne exposures that could exceed a WISHA permissible exposure limit or a published exposure limit and employees aren't adequately trained or equipped to control the release.





# Formaldehyde Rules

Chapter 296-856 WAC

## Resources

### Helpful Tools

Substance Technical Guideline for Formaldehyde .....	R-3
Medical Surveillance .....	R-19
Medical Disease Questionnaire .....	R-29
Medical Surveillance Fact Sheet for Employees .....	R-39



# Notes

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# Substance Technical Guideline for Formaldehyde

Use with the Formaldehyde Rule, Chapter 296-856 WAC

This helpful tool is a guideline for both:

- General information about formaldehyde exposure  
**and**
- Specific information about Formaldehyde solution called Formalin.
  - Formaldehyde is most commonly used as formalin, which is a solution that contains 37% formaldehyde in water.

When exposure is from resins capable of releasing formaldehyde, the resin itself and other impurities or decomposition products may also be toxic. You should be aware of the hazards associated with all materials you handle.

Specific information and guidance about formaldehyde are outlined in this helpful tool under the following topics:

- Formaldehyde Health Effects
- Formaldehyde Technical Data Sheet
- Exposure monitoring
- Exposure controls
- Personal Protective Equipment (PPE)
- Spills and Other Emergencies
- Emergency First Aid Response



# Substance Technical Guideline for Formaldehyde

Use with the Formaldehyde Rule, Chapter 296-856 WAC

## FORMALDEHYDE HEALTH EFFECTS

Both *acute* and *chronic* exposures to formaldehyde can cause adverse health effects.

### Acute Exposures

- Acute exposures generally consist of single exposures to high concentrations of formaldehyde, which may occur during an uncontrolled spill or release of formaldehyde gas.
- Acute formaldehyde exposure effects are shown in Table HT-1, *Acute Health Effects of Formaldehyde Exposure*.



# Substance Technical Guideline for Formaldehyde

Use with the Formaldehyde Rule, Chapter 296-856 WAC

## FORMALDEHYDE HEALTH EFFECTS (CONTINUED)

**Table HT-1**  
**Acute Health Effects of Formaldehyde Exposure**

Type of contact	Health Effects
<b>Ingestion (swallowing)</b>	Liquids containing 10% to 40% formaldehyde cause severe irritation and inflammation of the mouth, throat, and stomach. Severe stomach pains will follow ingestion with possible loss of consciousness and death.
	Ingestion of dilute formaldehyde solutions (0.03% to 0.04%) may cause discomfort in the stomach and pharynx.
<b>Inhalation (breathing)</b>	Formaldehyde is highly irritating to the upper respiratory tract and eyes.
	0.5 to 2.0 parts per million (ppm) may irritate the eyes, nose, and throat of some individuals.
	3 to 5 ppm also cause tearing of the eyes and are intolerable to some persons.
	10 to 20 ppm cause difficulty in breathing, burning of the nose and throat, coughing, and heavy tearing of the eyes
	25 to 30 ppm causes severe respiratory tract injury leading to inflammation and accumulation of fluid in the lung
	100 ppm is immediately dangerous to life and health. Deaths from accidental exposure to high concentrations of formaldehyde have been reported.
<b>Skin</b>	Formaldehyde is a severe skin irritant and a sensitizer.
	Contact with Formaldehyde causes white discoloration, smarting, drying, cracking, and scaling.
	Prolonged and repeated contact can cause numbness and a hardening or tanning of the skin.
	Previously exposed persons may react to future exposure with an allergic eczematous dermatitis or hives.
<b>Eye</b>	Formaldehyde solutions splashed in the eye can cause injuries ranging from transient discomfort to severe, permanent corneal clouding and loss of vision.
	The severity of the effect depends on the concentration of formaldehyde in the solution and if the eyes are flushed with water immediately after the incident. <b>Note:</b> The perception of formaldehyde by odor and eye irritation becomes less apparent over time, as one gets used to formaldehyde exposure. This can lead to a hazardous exposure if a worker is relying on odor or irritation to alert them to the potential for exposure.



# Substance Technical Guideline for Formaldehyde

Use with the Formaldehyde Rule, Chapter 296-856 WAC

## FORMALDEHYDE HEALTH EFFECTS (CONTINUED)

### Chronic exposures

- Chronic exposures are the result of exposure to low levels of formaldehyde over a period of time. Because of the low level exposure, the employee may not be aware of any immediate symptoms of exposure.
- The effects of chronic formaldehyde exposure can include the following:
  - Cancer
    - In humans, formaldehyde exposure has been associated with cancers of the lung, nasopharynx and oropharynx, and nasal passages. Repeated and prolonged exposure increases the risk.
    - Various animal experiments have conclusively shown formaldehyde causes cancer in rats.
  - Damage to DNA
    - DNA breaks
    - Sister chromatid exchange (DNA transfer during cell division)
    - Other chromosomal abnormalities.
  - Respiratory impairment
    - Some persons have developed asthma or bronchitis following exposure to formaldehyde, most often as the result of an accidental spill involving a single exposure to a high concentration of formaldehyde.
    - Structural changes in the epithelial cells in the human nose have been observed.
    - Rats exposed to formaldehyde at 2 ppm developed benign nasal tumors and changes of the cell structure in the nose as well as inflamed mucous membranes of the nose.



# Substance Technical Guideline for Formaldehyde

Use with the Formaldehyde Rule, Chapter 296-856 WAC

## FORMALDEHYDE TECHNICAL DATA SHEET

- General and specific information about Formaldehyde is outlined in the Formaldehyde Technical Data Sheet. This information can be used to inform and train your employees about the safe handling practices and hazards of formaldehyde in your workplace.
- Specific training requirements are found in Training, WAC 296-856-20020, in this chapter.
  - You should modify your training according to the actual products used.
    - Product specific information can be obtained from the material safety data sheet you receive with the product, or from the manufacturer or supplier.



### Note:

- The precise hazards from exposure to formaldehyde depend on both of the following:
  - The form (solid, liquid, or gas) of the material
  - The concentration of formaldehyde present
- For example, spills or splashes from 37% to 50% solutions of formaldehyde present a much greater hazard to the skin and eyes than from solutions containing less than 1% formaldehyde.



# Substance Technical Guideline for Formaldehyde

Use with the Formaldehyde Rule, Chapter 296-856 WAC

## FORMALDEHYDE TECHNICAL DATA SHEET

### Formaldehyde Synonyms

- Formaldehyde
- Formic Aldehyde
- Paraform
- Formol
- Formaldehyde (Methanol-free)
- Fyde
- Formalith
- Methanal
- Methyl Aldehyde
- Methylene Glycol
- Methylene Oxide
- Tetraoxymethalene
- Oxomethane
- Oxymethylene

### Chemical information

- Family: Aldehyde
- Formula:  $\text{CH}_2\text{O}$
- Molecular weight: 30.03
- Chemical abstracts service number (CAS number): 50-00-0.

### Components and Contaminants of Formaldehyde in Formalin solutions

- 37.0% formaldehyde
- 63.0% water.
- Formic acid (alcohol free)
- Paraformaldehyde

**Note:**

Inhibited solutions contain 10-15% methanol.

### Exposure limits

- Time-weighted average (TWA) - 0.75 ppm
- Short-term exposure limit (STEL) - 2 ppm





# Substance Technical Guideline for Formaldehyde

Use with the Formaldehyde Rule, Chapter 296-856 WAC

## FORMALDEHYDE TECHNICAL DATA SHEET (Continued)

### Physical properties

- Colorless liquid with a pungent odor
- Boiling point: 214°F (101°C)
- Specific gravity: 1.08 (H<sub>2</sub>O = 1 @ 20 C)
- pH: 2.8-4.0
- Solubility:
- Miscible In water
- Solvent is soluble in alcohol and acetone
- Vapor density: 1.04 (Air = 1 @ 20 C)
- Odor threshold: 0.8-1 ppm.

### Fire and explosion hazards

- Moderate fire and explosion hazard when exposed to heat or flame.
- Reaction with the following substances yields explosive compounds:
  - Nitrogen dioxide
  - Nitromethane
  - Perchloric acid and aniline
  - Peroxyformic acid
- Flash point: 185°F (85°C) closed cup.
  - Note:**  
Although the flash point of 37% formaldehyde solutions is above normal room temperature, the explosion range is very wide:
    - Lower explosion limit: 7% by volume in air
    - Upper explosion limit: 73% by volume in air
- Autoignition temperature: 806°F (430°C)
- Flammable class (WISHA): III A
  - Extinguishing media: Use the following:
    - Dry chemical
    - "Alcohol foam"
    - Carbon dioxide
    - Water in flooding amounts as fog
  - Solid streams may not be effective.
  - Flushing spills with water spray can dilute them to produce nonflammable mixtures. However, water runoff should be contained for treatment.
  - Cool fire-exposed containers with water from the side until well after fire is out.



# Substance Technical Guideline for Formaldehyde

Use with the Formaldehyde Rule, Chapter 296-856 WAC

## FORMALDEHYDE TECHNICAL DATA SHEET (Continued)

### ➤ National Fire Protection Association Section 325M Designation:

- Health:
  - 2-Materials hazardous to health, but areas may be entered with full-faced mask self-contained breathing apparatus that provides eye protection.
- Flammability:
  - 2-Materials which should be moderately heated before ignition will occur. You may use water spray to extinguish the fire because the material can be cooled below its flash point.
- Reactivity:
  - D-Materials which:
    - In themselves are normally stable even under fire exposure conditions and
    - Are not reactive with water.

Normal fire fighting procedures may be used.

### Reactivity

#### ➤ Stability:

- Formaldehyde solutions may self-polymerize to form paraformaldehyde which precipitates.

#### ➤ Incompatibility (materials to avoid):

- Strong oxidizing agents, caustics, strong alkalies, isocyanates, anhydrides, oxides, and inorganic acids. A violent reaction occurs when formaldehyde is mixed with strong oxidizers.
- Hydrochloric acid reacts to form the potent carcinogen, bis-chloromethyl ether.
- Nitrogen dioxide, nitromethane, perchloric acid and aniline, or peroxyformic acid reacts to yield explosive compounds.

#### ➤ Hazardous combustion or decomposition products:

- Oxygen from the air can oxidize formaldehyde to formic acid, especially when heated.
- Formic acid is corrosive.

### Health hazard data

#### ➤ Acute animal toxicity

- Oral, rats: LD50 = 800 mg/kg
- Oral, mouse: LD50 = 42 mg/kg
- Inhalation, rats: LC50 = 250 mg/kg
- Inhalation, mouse: LC50 = 900 mg/kg
- Inhalation, rats: LC50 = 590 mg/kg



# Substance Technical Guideline for Formaldehyde

Use with the Formaldehyde Rule, Chapter 296-856 WAC

## EXPOSURE MONITORING

- Initial monitoring is performed when there is a potential for an employee to be exposed to airborne formaldehyde in the workplace. If the initial monitoring indicates an exposure at or above the action level, the employer is required to continue monitoring periodically as indicated in Exposure evaluations, WAC 296-856-20050, of this chapter.
- Procedures for exposure monitoring are contained in Table HT-2, Monitoring Procedures.

**Table HT-2**  
**Monitoring Procedures**

Task	Guidelines for Monitoring procedures
<b>Selection of Employees to Monitor</b>	<ul style="list-style-type: none"><li>➤ If an employee's exposure to formaldehyde could exceed the 0.5 ppm action level or the 2 ppm STEL, exposure should be monitored.<ul style="list-style-type: none"><li>– A "representative" employee or employees will be asked to wear a sampling device to collect formaldehyde samples.</li><li>– Notify the person conducting the monitoring if you have any difficulties wearing the device.</li></ul></li></ul>
<b>Sampling and analysis methods</b>	<ul style="list-style-type: none"><li>➤ If methods to accurately evaluate the concentration of formaldehyde in employees' breathing zone include one of the following:<ul style="list-style-type: none"><li>– Collection of formaldehyde on liquid or solid sorbents with subsequent chemical analysis.</li><li>– Short-term exposure may be measured by real-time continuous monitoring systems and portable direct reading instruments.</li></ul></li><li>➤ Measurements taken to determine time-weighted average (TWA<sub>8</sub>) exposures are best taken with samples covering the full shift.</li><li>➤ Samples collected should be taken from the employee's breathing zone air.</li><li>➤ If there are tasks that involve brief but intense exposure to formaldehyde, employee exposure should be measured to assure compliance with the STEL.</li></ul>
<b>Notifying employees of monitoring results</b>	<ul style="list-style-type: none"><li>➤ Your employer should inform you of the results of exposure monitoring representative of your work.</li><li>➤ Your employer may inform you in writing, but may also post the results where employees have ready access to them.</li></ul>
<b>Corrective action</b>	<ul style="list-style-type: none"><li>➤ Corrective actions should be taken when monitoring results are above the 8-hour time weighted average (TWA<sub>8</sub>) or the 15-minute short-term exposure limit (STEL)<ul style="list-style-type: none"><li>– Document any reason why exposures can't be lowered to below the PEL</li></ul></li></ul>



# Substance Technical Guideline for Formaldehyde

Use with the Formaldehyde Rule, Chapter 296-856 WAC

## EXPOSURE CONTROLS

Exposure controls means the use of equipment, processes, and work practices to eliminate or minimize exposure. The following control methods may be used as appropriate for your workplace.

### Ventilation

- Ventilation is the most widely used control method for reducing the concentration of airborne formaldehyde. There are two primary types of ventilation:
  - Local exhaust ventilation, designed to capture airborne formaldehyde as near to the point of generation as possible. To protect you, the direction of contaminant (air) flow should always be toward the local exhaust system inlet and away from you.
- and**
- General dilution ventilation, involving continuous introduction of fresh air into the workroom to mix with the contaminated air and lower the concentration of formaldehyde.
  - Effectiveness depends on the concentration of formaldehyde and the volume of air supplied.
  - This may be the only practical method of control where devices emitting formaldehyde are spread out over a large area.



Link:

NIOSH has published a control bulletin discussing ventilation controls for formaldehyde exposures during embalming. For further information on this subject visit

<http://www.cdc.gov/niosh/hc26.html>

### Substitution

- One of the most effective methods of controlling exposure to formaldehyde is to substitute a safer, less toxic material where possible



# Substance Technical Guideline for Formaldehyde

Use with the Formaldehyde Rule, Chapter 296-856 WAC

## EXPOSURE CONTROLS (CONTINUED)

### Enclosure

- Enclosure of the process is another preferred method of controlling worker exposure. The employee is prevented from coming into direct contact with the formaldehyde. The enclosure should be designed with a slight vacuum so that any leaks will result in the flow of external air **into** the enclosure

### Isolation

- Employees may be isolated from direct contact with the work environment by the use of automated equipment operated by personnel observing from a closed control booth or room

### Work Practices

- Work practices and administrative procedures are an important part of a control system. If you are asked to perform a task in a certain manner to limit your exposure to formaldehyde, it's extremely important that you follow these procedures
- Formaldehyde is incompatible with and reacts with strong oxidizers, alkalis & acids; phenols; urea; oxides; isocyanates; caustics; anhydrides



# Substance Technical Guideline for Formaldehyde

Use with the Formaldehyde Rule, Chapter 296-856 WAC

## PERSONAL PROTECTIVE EQUIPMENT (PPE)

This section addresses the selection and maintenance of protective equipment and clothing.

### Skin protection

- Solutions containing greater than 1% formaldehyde are damaging to the skin and eyes. PPE adequate to prevent contact with such solutions needs to be provided to employees.
- Some solids that release formaldehyde and solutions that contain less than 1% formaldehyde can also pose a hazard to employees. In these instances, appropriate PPE needs to be provided in accordance with the general Personal Protective Equipment rule, WAC 296-800-160.
- Skin sensitization after exposure to high airborne concentrations has been reported. At concentration 100 ppm or more, the standard requires whole body protection.

### Hand Protection

- Butyl and nitrile glove materials provide the greatest protection for the hands. Greater thicknesses of other materials (natural rubber, PVC, polyethylene) may be suitable for short use periods, but gloves may have to be changed more frequently due to degradation. All these materials are generally suitable for splash protection.
- Barrier creams aren't regarded as effective protection against formaldehyde

### Respiratory protection

- Use NIOSH-approved full facepiece negative pressure respirators, with a change out schedule for the cartridges or canisters, or positive pressure supplied-air respirators as directed in chapter 296-842-130.
- In areas where the formaldehyde concentration might be 100 ppm or more, use complete body protection, including a positive pressure self-contained breathing apparatus (SCBA) with a full face piece or in combination with a supplied-air respirator.

### Eye protection (For Formaldehyde solutions of 1% or more)

- If you might be splashed in the eyes with Formaldehyde, it's essential that you wear chemical resistant splash goggles or some other type of complete protection for the eye.
- You may also need a face shield in addition to eye protection to protect the face nose and mouth from splashes.



# Substance Technical Guideline for Formaldehyde

Use with the Formaldehyde Rule, Chapter 296-856 WAC

## SPILLS AND OTHER EMERGENCIES

There isn't a specific exposure level that triggers the emergency response provisions for formaldehyde and its solutions. When determining if there is a need to provide for emergencies, consider the worst possible emergency scenario, and whether the employees' lives or health are in jeopardy.

- Don't attempt to clean up a spill unless you are properly trained and equipped to do so.
- Follow the procedure established by your employer for Formaldehyde spills.
- For small containers, place the leaking container into a larger container that can be sealed or into a well-ventilated area, such as a laboratory hood.
- Take up small spills with absorbent material and place the waste into properly labeled and sealed containers for later disposal.
- For larger spills, you may be able to neutralize the spill with sodium hydroxide or sodium sulfite.
- Be aware of your emergency response plan if you work in an area where a large amount of formaldehyde could be released in an accident or from equipment failure.
- You should be trained in your specific duties in the event of a release, and it's important that you clearly understand these duties.
- Emergency equipment should be accessible and you should be trained to use any equipment that you might need. Clean formaldehyde contaminated equipment before reuse.
- If a spill of appreciable quantity occurs leave the area quickly, unless you have specific emergency duties.
  - Don't attempt to remove a victim, unless that's your assigned duty.
  - Don't touch spilled material.
  - Use water spray to reduce vapors.
  - Don't smoke, and prohibit all flames or flares in the hazard area.



### Note:

The Department of Ecology has rules regarding the clean up of toxic waste and notify state and local authorities, when required.



# Substance Technical Guideline for Formaldehyde

Use with the Formaldehyde Rule, Chapter 296-856 WAC

## EMERGENCY FIRST AID RESPONSE

- The information in Table HT-3 provides guidance for emergency first aid response in the event of acute exposure to formaldehyde.
  - Acute exposure to formaldehyde can result in severe or life threatening injury.
  - Any person experiencing an acute formaldehyde exposure should be evaluated by a physician
- If you are exposed to formaldehyde in an emergency situation and develop signs or symptoms associated with acute toxicity from formaldehyde exposure, your employer should provide you with a medical examination as soon as possible.
  - This medical examination should include all steps necessary to stabilize your health.
  - If symptoms are severe, you may be kept in the hospital for observation to ensure that any delayed effects are recognized and treated.





# Substance Technical Guideline for Formaldehyde

Use with the Formaldehyde Rule, Chapter 296-856 WAC

## EMERGENCY FIRST AID RESPONSE (CONTINUED)

**Table HT-3**  
**Guidelines for Emergency First Aid Response**

Emergency situation	Guidelines for responding
<b>Ingestion (swallowing):</b>	<ul style="list-style-type: none"><li>➤ If the victim is conscious, dilute, inactivate, or absorb the ingested formaldehyde by giving milk, activated charcoal, or water. Any organic material will inactivate formaldehyde.</li><li>➤ Keep affected person warm and at rest.</li><li>➤ Get medical attention immediately.</li><li>➤ If vomiting occurs, keep head lower than hips.</li></ul>
<b>Inhalation (breathing):</b>	<ul style="list-style-type: none"><li>➤ Remove the victim from the exposure area to fresh air immediately.</li><li>➤ If breathing has stopped, give artificial respiration.</li><li>➤ Qualified first-aid or medical personnel should administer oxygen, if available, and maintain the patient's airways and blood pressure until the victim can be transported to a medical facility.</li><li>➤ If exposure results in a highly irritated upper respiratory tract and coughing continues for more than ten minutes, the worker should be hospitalized for observation and treatment.</li><li>➤ Keep the affected person warm and at rest.</li></ul>
<b>Skin contact:</b>	<ul style="list-style-type: none"><li>➤ Remove contaminated clothing (including shoes) immediately.</li><li>➤ Wash the affected area of your body with soap or mild detergent and large amounts of water until no evidence of the chemical remains (at least 15 to 20 minutes).</li><li>➤ If there are chemical burns, get first aid to cover the area with sterile, dry dressing, and bandages.</li><li>➤ Get medical attention if you experience appreciable eye or respiratory irritation.</li></ul>
<b>Eye contact:</b>	<ul style="list-style-type: none"><li>➤ Wash the eyes immediately with large amounts of water occasionally lifting lower and upper lids, until no evidence of chemical remains (at least 15 to 20 minutes).</li><li>➤ In case of burns, apply sterile bandages loosely without medication.</li><li>➤ Get medical attention immediately. If you have experienced appreciable eye irritation from a splash or excessive exposure, you should be referred promptly to an ophthalmologist for evaluation.</li></ul>



# Notes

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# Medical Surveillance

Use with the Formaldehyde Rule, Chapter 296-856 WAC

This helpful tool provides additional information for medical providers who supply medical surveillance for formaldehyde exposure.

The occupational health hazards of formaldehyde exposure are primarily due to its toxic effects after the following experiences:

- Inhalation
- Direct contact with the skin or eyes by liquid or vapor
- Ingestion

Specifics about occupational health hazards and the effects of formaldehyde exposure are outlined on this form under the following topics:

- Effects of exposure
- Surveillance consideration
- Employer obligations
- Physicians obligations



# Medical Surveillance

Use with the Formaldehyde Rule, Chapter 296-856 WAC

## EFFECTS OF EXPOSURE

### Acute

- Inhalation:
  - Concentrations above 50 ppm can cause severe pulmonary reactions within minutes. These include pulmonary edema, pneumonia, and bronchial irritation.
  - Concentrations above 5 ppm readily cause irritation of the lower airway characterized by cough, chest tightness, and wheezing.
    - Formaldehyde gas can be a pulmonary sensitizer that can cause occupational asthma in a previously normal individual. Formaldehyde can produce symptoms of bronchial asthma in humans. The mechanism may be either sensitization of the individual by exposure to formaldehyde or direct irritation by formaldehyde in persons with preexisting asthma.
    - Formaldehyde is highly irritating to the upper airway, characterized by dry or sore throat, itching and burning sensations of the nose, and nasal congestion.
    - Upper airway irritation can occur over a wide range of concentrations, most frequently above 1 ppm. However, airway irritation has occurred in workers with exposures to formaldehyde as low as 0.1 ppm.
- Eye contact:
  - Concentrations of formaldehyde between 0.05 ppm and 0.5 ppm produce a sensation of irritation in the eyes with burning, itching, redness, and tearing.
    - Increased rate of blinking and eye closure generally protects the eye from damage at these low levels.
    - Tolerance can occur in workers continuously exposed to concentrations of formaldehyde in this range.
  - Accidental splash injuries of human eyes to aqueous solutions of formaldehyde (formalin) have resulted in a wide range of ocular injuries including corneal opacities and blindness. The severity of the reactions have been directly dependent on the concentration of formaldehyde in solution and the amount of time lapsed before emergency and medical intervention.



# Medical Surveillance

Use with the Formaldehyde Rule, Chapter 296-856 WAC

## EFFECTS OF EXPOSURE (CONTINUED)

### Acute (continued)

- Skin contact:
  - Exposure to formaldehyde solutions can cause irritation of the skin and allergic contact dermatitis.
  - Symptoms include erythema, edema, and vesiculation or hives.
  - Exposure to liquid formalin or formaldehyde vapor can provoke skin reactions in sensitized individuals even when airborne concentrations of formaldehyde are well below 1 ppm.
- Ingestion:
  - Ingestion of as little as 30 ml of a 37% solution of formaldehyde (formalin) can result in death.
  - Gastrointestinal toxicity after ingestion is most severe in the stomach and results in symptoms which can include nausea, vomiting, and severe abdominal pain.
  - Diverse damage to other organ systems including the liver, kidney, spleen, pancreas, brain, and central nervous systems can occur from the acute response to ingestion of formaldehyde.

### Chronic

- Long-term exposure to formaldehyde has been shown to be associated with an increased risk of the following types of cancer in humans:
  - • Cancer of the nose and accessory sinuses
  - • Nasopharyngeal and oropharyngeal cancer
  - • • Lung cancer



# Medical Surveillance

Use with the Formaldehyde Rule, Chapter 296-856 WAC

## SURVEILLANCE CONSIDERATIONS

### Work History

- Because formaldehyde is a sensitizer, it is important to obtain work history on both prior occupational and non-occupational exposure to formaldehyde.

### Medical History

- Respiratory
  - Include a comprehensive review of the respiratory system, for example, questions about:
    - Dyspnea on exertion
    - Shortness of breath
    - Chronic airway complaints
    - Hyperreactive airway disease
    - Rhinitis
    - Bronchitis
    - Bronchiolitis
    - Asthma
    - Emphysema
    - Respiratory allergic reaction
    - Other preexisting pulmonary disease
  - Obtain any prior history of symptoms from exposure to pulmonary irritants.
  - Obtain a complete smoking history.



# Medical Surveillance

Use with the Formaldehyde Rule, Chapter 296-856 WAC

## SURVEILLANCE CONSIDERATIONS (CONTINUED)

### Medical History (continued)

- Skin disorders
  - Previous exposure to formaldehyde and other dermal sensitizers.
  - A history of skin disorders including:
    - Skin irritation
    - Previously documented skin sensitivity
    - Other dermatologic disorders
- Atopic or allergic diseases
  - Identify individuals with prior allergen sensitization.
  - A history of atopic disease and allergies to formaldehyde or any other substances.



#### Note:

- Keep the findings of the medical and work histories in a standardized form for comparison of the year-to-year results.
- Comparison of the results from previous years with present results provides the best method for detecting a general deterioration in health, when toxic signs and symptoms are measured subjectively.



# Medical Surveillance

Use with the Formaldehyde Rule, Chapter 296-856 WAC

## SURVEILLANCE CONSIDERATIONS (CONTINUED)

### Physical Examination

- Mucosa of eyes and airways:
  - Be alert to evidence of this irritation.
  - A speculum examination of the nasal mucosa may be helpful in assessing possible irritation and cytotoxic changes, as may be indirect inspection of the posterior pharynx by mirror.
- Pulmonary system:
  - Perform a conventional respiratory examination, including inspection of the thorax and auscultation and percussion of the lung fields.
  - Pulmonary function testing should be used whenever the physician feels it's appropriate.
  - In cases of alleged formaldehyde-induced airway disease, other possible causes of pulmonary dysfunction (including exposures to other substances) should be ruled out.
    - A chest radiograph may be useful in these circumstances.
  - In cases of suspected airway hypersensitivity or allergy, it may be appropriate to use bronchial challenge testing with formaldehyde or methacholine to determine the nature of the disorder.
    - Such testing should be performed by, or under the supervision of, a physician experienced in the procedures involved.





# Medical Surveillance

Use with the Formaldehyde Rule, Chapter 296-856 WAC

## SURVEILLANCE CONSIDERATIONS (CONTINUED)

### Physical Examination (continued)

- Skin:
  - The physician should be alert to evidence of dermal irritation or sensitization, including:
    - Erythema and inflammation
    - Urticaria
    - Blistering
    - Scaling
    - Formation of skin fissures
    - Other symptoms.
  - Note the presence of other dermal diseases.
  - Skin sensitivity testing carries with it some risk of inducing sensitivity, and therefore, skin testing for formaldehyde sensitivity should not be used as a routine screening test.
    - Sensitivity testing may be indicated in the investigation of a suspected existing sensitivity.
    - Guidelines for such testing have been prepared by the North American Contact Dermatitis Group.
    - If necessary, other medical examinations or tests should be performed as indicated:
  - When workers are exposed in an emergency, focus the examination on the organ systems most likely to be affected.
  - If a severe overexposure requiring medical intervention or hospitalization has occurred, the physician must be alert to the possibility of delayed symptoms. Follow-up nonroutine examinations may be necessary to assure the patient's well-being.



# Medical Surveillance

Use with the Formaldehyde Rule, Chapter 296-856 WAC

## EMPLOYER OBLIGATIONS

- Employers are required to provide the physician with all of the following:
  - A copy of Chapter 296-856 WAC, Formaldehyde
  - A description of the affected employee's duties as they relate to formaldehyde exposure
  - An estimate of the employee's exposure including duration, for example, 15 hours per week, or three 8-hour shifts, full-time
  - A description of any personal protective equipment, including respirators, used by the employee
  - The results of any previous medical determinations for the affected employee related to formaldehyde exposure, to the extent that this information is within the employer's control.



# Medical Surveillance

Use with the Formaldehyde Rule, Chapter 296-856 WAC

## PHYSICIAN OBLIGATIONS

- Provide the employer with a written statement:
  - Containing an opinion regarding all of the following:
    - Whether the employee has any medical condition that increases their risk of impaired health from exposure to formaldehyde or the use of respirators
    - Any restrictions that should be placed on the employee's exposure to formaldehyde or use of respirators
    - The use of protective clothing or equipment such as respirators. If the employee wears a respirator as a result of his or her exposure to formaldehyde, the physician's opinion must also contain a statement regarding the suitability of the type of respirator assigned.
  - Containing no specific medical information or findings.
  - That indicates the employee has been told:
    - The results of the medical examination and
    - About any medical conditions that require further explanation or treatment



# Notes

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# Medical Disease Questionnaire

Use with the Formaldehyd Rule, Chapter 296-856 WAC

## IDENTIFICATION

- Business name:
- Date:
- Employee name:
- Identification code:
- Job title:
- Birth date:
- Age:
- Gender:
- Height:
- Weight:



# Medical Disease Questionnaire

Use with the Formaldehyd Rule, Chapter 296-856 WAC

## MEDICAL HISTORY

- Have you ever been admitted to the hospital as a patient?  
Yes No  
If yes, what kind of problem were you having?
- Have you ever had any kind of operation?  
Yes No  
If yes, what kind?
- Do you take any kind of medicine regularly?  
Yes No  
If yes, what kind?
- Are you allergic to any drugs, foods, or chemicals?  
Yes No  
If yes, what kind of allergy is it?  
What causes the allergy?
- Have you ever been told that you have asthma, hay fever, or sinusitis?  
Yes No
- Have you ever been told that you have emphysema, bronchitis, or any other respiratory problems?  
Yes No
- Have you ever been told you had hepatitis?  
Yes No
- Have you ever been told that you have cirrhosis?  
Yes No
- Have you ever been told that you had cancer?  
Yes No
- Have you ever had arthritis or joint pain?  
Yes No
- Have you ever been told that you had high blood pressure?  
Yes No
- Have you ever had a heart attack or heart trouble?  
Yes No



# Medical Disease Questionnaire

Use with the Formaldehyde Rule, Chapter 296-856 WAC

## MEDICAL HISTORY UPDATE

- Have you been admitted to the hospital as a patient any time within the past year?  
Yes No
  - If so, for what condition?
- Have you been under the care of a physician during the past year?  
Yes No
  - If so, for what condition?
- Is there any change in your breathing since last year?  
Yes No
  - If a change, is it:
    - Better?
    - Worse?
    - Do you know why?
- Is your general health different this year from last year?  
Yes No
  - If different, in what way?
- Have you in the past year, or are you now taking any medication on a regular basis?  
Yes No
  - If yes:
    - Medication name
    - Condition being treated



# Medical Disease Questionnaire

Use with the Formaldehyde Rule, Chapter 296-856 WAC

## OCCUPATIONAL HISTORY

- How long have you worked for your present employer?
- What jobs have you held with this employer? Include job title and length of time in each job.
- In each of these jobs, how many hours a day were you exposed to chemicals?
- What chemicals have you worked with most of the time?
- Have you ever noticed any type of skin rash you feel was related to your work?  
Yes No
- Have you ever noticed that any kind of chemical makes you cough?  
Yes No
  - Wheeze?  
Yes No
  - Become short of breath or cause your chest to become tight?  
Yes No
- Are you exposed to any dust or chemicals at home?  
Yes No
  - If yes, explain.
- In other jobs, have you ever had exposure to:
  - Wood dust?  
Yes No
  - Nickel or chromium?  
Yes No
  - Silica (foundry, sand blasting)?  
Yes No
  - Arsenic or asbestos?  
Yes No
  - Organic solvents?  
Yes No
  - Urethane foams?  
Yes No





# Medical Disease Questionnaire

Use with the Formaldehyd Rule, Chapter 296-856 WAC

## OCCUPATIONAL HISTORY UPDATE

- Are you working on the same job this year as you were last year?  
Yes No
  - If not, how has your job changed?
- What chemicals are you exposed to on your job?
- How many hours a day are you exposed to chemicals?
- Have you noticed any skin rash within the past year you feel was related to your work?  
Yes No
  - If so, explain circumstances:
- Have you noticed that any chemical makes you cough, be short of breath, or wheeze?  
Yes No
  - If so, can you identify it?



# Medical Disease Questionnaire

Use with the Formaldehyde Rule, Chapter 296-856 WAC

## MISCELLANEOUS

- Do you smoke?  
Yes No
  - If so, how much and for how long?
    - Pipe
    - Cigars
    - Cigarettes
- Do you drink alcohol in any form?  
Yes No
  - If so, how much, how long, and how often?
- Do you wear glasses or contact lenses?  
Yes No
- Do you get any physical exercise other than that required to do your job?  
Yes No
  - If so, explain:
- Do you have any hobbies or “side jobs” that require you to use chemicals, such as furniture stripping, sand blasting, insulation or manufacture of urethane foam, furniture, etc.?  
Yes No
  - If so, please describe, giving type of business or hobby, chemicals used and length of exposures.



# Medical Disease Questionnaire

Use with the Formaldehyde Rule, Chapter 296-856 WAC

## SYMPTOMS QUESTIONNAIRE

- Do you ever have any shortness of breath?  
Yes No
  - If yes, do you have to rest after climbing several flights of stairs?  
Yes No
  - If yes, if you walk on the level with people your own age, do you walk slower than they do?  
Yes No
  - If yes, if you walk slower than a normal pace, do you have to limit the distance that you walk?  
Yes No
  - If yes, do you have to stop and rest while bathing or dressing?  
Yes No
- Do you cough as much as three months out of the year?  
Yes No
  - If yes, have you had this cough for more than two years?  
Yes No
  - If yes, do you ever cough anything up from the chest?  
Yes No
- Do you ever have a feeling of smothering, unable to take a deep breath, or tightness in your chest?  
Yes No
  - If yes, do you notice that this occurs on any particular day of the week?  
Yes No
  - If yes, what day of the week?
  - If yes, do you notice that this occurs at any particular place?  
Yes No
  - If yes, do you notice that this is worse after you have returned to work after being off for several days?  
Yes No



# Medical Disease Questionnaire

Use with the Formaldehyde Rule, Chapter 296-856 WAC

## SYMPTOMS QUESTIONNAIRE (CONTINUED)

- Have you ever noticed any wheezing in your chest?  
Yes No
  - If yes, is this only with colds or other infections?  
Yes No
  - Is this caused by exposure to any kind of dust or other material?  
Yes No
  - If yes, what kind?
- Have you noticed any burning, tearing, or redness of your eyes when you are at work?  
Yes No
  - If so, explain circumstances:
- Have you noticed any sore or burning throat or itchy or burning nose when you are at work?  
Yes No
  - If so, explain circumstances:
- Have you noticed any stuffiness or dryness of your nose?  
Yes No
- Do you ever have swelling of the eyelids or face?  
Yes No
- Have you ever been jaundiced?  
Yes No
  - If yes, was this accompanied by any pain?  
Yes No
- Have you ever had a tendency to bruise easily or bleed excessively?  
Yes No
- Do you have frequent headaches that are not relieved by aspirin or tylenol?  
Yes No
  - If yes, do they occur at any particular time of the day or week?  
Yes No
  - If yes, when do they occur?



# Medical Disease Questionnaire

Use with the Formaldehyde Rule, Chapter 296-856 WAC

## SYMPTOMS QUESTIONNAIRE (CONTINUED)

- Do you have frequent episodes of nervousness or irritability?  
Yes No
- Do you tend to have trouble concentrating or remembering?  
Yes No
- Do you ever feel dizzy, light-headed, excessively drowsy, or like you have been drugged?  
Yes No
- Does your vision ever become blurred?  
Yes No
- Do you have numbness or tingling of the hands or feet or other parts of your body?  
Yes No
- Have you ever had chronic weakness or fatigue?  
Yes No
- Have you every had any swelling of your feet or ankles to the point where you could not wear your shoes?  
Yes No
- Are you bothered by heartburn or indigestion?  
Yes No
- Do you ever have itching, dryness, or peeling and scaling of the hands?  
Yes No
- Do you ever have a burning sensation in the hands, or reddening of the skin?  
Yes No
- Do you ever have cracking or bleeding of the skin on your hands?  
Yes No



# Medical Disease Questionnaire

Use with the Formaldehyde Rule, Chapter 296-856 WAC

## SYMPTOMS QUESTIONNAIRE (CONTINUED)

- Are you under a physician's care?  
Yes   No
  - If yes, for what are you being treated?
- Do you have any physical complaints today?  
Yes   No  
If yes, explain:
- Do you have other health conditions not covered by these questions?  
Yes   No
  - If yes, explain:



# Medical Surveillance Fact Sheet For Employees

Use with Formaldehyde Rule, Chapter 296-856 WAC

You are strongly encouraged to participate in your employer's medical surveillance program. Participation in your employer's medical surveillance program will help to maintain a safe workplace and prevent illnesses associated with formaldehyde over-exposure. Components of a medical surveillance program include the following:

- Your employer should make sure a medical surveillance program is available to you under the following circumstances:
  - If your formaldehyde exposure is at concentrations above 0.5 ppm as an 8-hour average or 2 ppm over any 15-minute period
  - At no expense
  - At a reasonable time and place
  - At the time of initial assignment and once a year afterward as long as exposure is at least above the action level of 0.5 ppm, or the short term exposure limit (STEL) of 2 ppm
- If you have signs and symptoms that are related to formaldehyde exposure, inform your employer even if exposure is below the above concentrations.
- The surveillance plan should include:
  - A medical disease questionnaire
  - A physical examination if the physician determines this is necessary.
- If your exposure is above the PEL, you are required to wear a respirator, your employer should offer you a physical examination and a pulmonary function test every year.
- The physician should collect all information needed to determine whether you are at increased risk from exposure to formaldehyde.
- At the physician's discretion, the medical examination may include other tests to make this determination, such as a chest x-ray.
- After a medical examination, the physician should provide you with a written opinion which includes any special protective measures recommended and any restrictions on exposure.
- The physician should inform employees of any medical conditions they may have which would be aggravated by exposure to formaldehyde.
- Your employer is required to retain all records from medical examinations, including disease surveys. Additional information about employee medical records can be found in Chapter 296-802 WAC, Employee Exposure and Medical Records, a separate chapter.



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### Statutory Authority

#### **296-856-100 Scope.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 06-08-087 (Order 05-12), § 296-856-100, filed 04/04/06, effective 09/01/06]

#### **296-856-200 Basic rules.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 06-08-087 (Order 05-12), § 296-856-200, filed 04/04/06, effective 09/01/06]

#### **296-856-20010 Preventive practices.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 06-08-087 (Order 05-12), § 296-856-20010, filed 04/04/06, effective 09/01/06]

#### **296-856-20020 Training.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 06-08-087 (Order 05-12), § 296-856-20020, filed 04/04/06, effective 09/01/06]

#### **296-856-20030 Personal protective equipment (PPE).**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 06-08-087 (Order 05-12), § 296-856-20030, filed 04/04/06, effective 09/01/06]

#### **296-856-20040 Employee protective measures.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 06-08-087 (Order 05-12), § 296-856-20040, filed 04/04/06, effective 09/01/06]

#### **296-856-20050 Exposure evaluations.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 06-08-087 (Order 05-12), § 296-856-20050, filed 04/04/06, effective 09/01/06]

#### **296-856-20060 Notification.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 06-08-087 (Order 05-12), § 296-856-20060, filed 04/04/06, effective 09/01/06]

#### **296-856-20070 Exposure records.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 06-08-087 (Order 05-12), § 296-856-20070, filed 04/04/06, effective 09/01/06]

#### **296-856-300 Exposure and medical monitoring.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 06-08-087 (Order 05-12), § 296-856-300, filed 04/04/06, effective 09/01/06]

#### **296-856-30010 Periodic exposure evaluations.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 06-08-087 (Order 05-12), § 296-856-30010, filed 04/04/06, effective 09/01/06]

#### **296-856-30020 Medical and emergency evaluations.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 06-08-087 (Order 05-12), § 296-856-30020, filed 04/04/06, effective 09/01/06]

#### **296-856-30030 Medical removal.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 06-08-087 (Order 05-12), § 296-856-30030, filed 04/04/06, effective 09/01/06]

#### **296-856-30040 Multiple LHCP review.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 06-08-087 (Order 05-12), § 296-856-30040, filed 04/04/06, effective 09/01/06]

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## Statutory Authority

### **296-856-30050 Medical records.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 06-08-087 (Order 05-12), § 296-856-30050, filed 04/04/06, effective 09/01/06]

### **296-856-400 Exposure control areas.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 06-08-087 (Order 05-12), § 296-856-400, filed 04/04/06, effective 09/01/06]

### **296-856-40010 Exposure controls.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 06-08-087 (Order 05-12), § 296-856-40010, filed 04/04/06, effective 09/01/06]

### **296-856-40020 Establishing exposure control areas.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 06-08-087 (Order 05-12), § 296-856-40020, filed 04/04/06, effective 09/01/06]

### **296-856-40030 Respirators.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 06-08-087 (Order 05-12), § 296-856-40030, filed 04/04/06, effective 09/01/06]

### **296-856-500 Definitions.**

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 06-08-087 (Order 05-12), § 296-856-500, filed 04/04/06, effective 09/01/06]

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